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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/803,789

03/17/2004

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04/27/2005

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EXAMINER

HA, NGUYEN T

ART UNIT

PAPER NUMBER

2831

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-------------------------------|---------------------------------|--|
| Office Action Summary | Application No. 10/803,789 | Applicant(s) PALANDUZ ET AL. | |
| | Examiner Nguyen T Ha | Art Unit 2831 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 4 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of embodiment III, figures 5-6 in the reply filed on 12/20/2004 is acknowledged. The traversal is on the ground(s) that the searches for embodiment I, II, III would be co-extensive. This is not found persuasive because the method claims 10-16 would be classified in a different class than claims 1-9.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Chakravorty (US 6,611,419).

Regarding claim 1, Chakravorty discloses a substrate of an integrated circuit package (figure 3), comprising:

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- a base structure/substrate (310) having upper and lower sides (326 & 329) and a plurality of via opening (315 & 327) formed therein;
- a conductive via in each via opening, the conductive vias (315 & 327) including at least power and ground vias (column 5, lines 20-33) (figure 3); and
- first and second capacitor (330) structures on the upper and lower sides of the base structure respectively, each capacitor structure including conductive power and ground planes (329 and 326, column 5, lines 24-33) and a dielectric layer (340) between the power and ground planes, the power and ground planes being electrically connected to at least one of the power and ground vias, respectively (figure 3).

Regarding claim 2, Chakravorty discloses the base structure is made of a sintered ceramic material (column 7, lines 9-13).

Regarding claim 3, Chakravorty discloses the vias includes signal vias, each signal via being electrically disconnected from both the power and ground planes (figure 3).

Regarding claim 5, Chakravorty discloses an integrated circuit package (figure 3) comprising:

- a base structure/substrate (310) having upper and lower sides (326 & 329) and a plurality of via opening (315 & 327) formed therein;
- a conductive via in each via opening (figure 3), the conductive vias (315 & 327) including at least power and ground vias (column 5, lines 20-33); and

- first and second capacitor structures (330) on the upper and lower sides of the base structure respectively, each capacitor structure including conductive power and ground planes (326 & 329, column 5, lines 24-33) and a dielectric layer (340) between the power and ground plane, the power and ground planes being electrically connected to at least one of the power and ground vias, respectively; and a dielectric having an integrated circuit formed therein mounted on the substrate (figure 3).

Regarding claim 6, Chakravorty discloses the substrate (310) is an interposer substrate, further comprising: a package substrate, the interposer substrate being mounted to the package substrate (figure 3).

Regarding claim 7, Chakravorty discloses the vias are connected to contacts on the package substrate without and x-y transformation (figure 3).

Regarding claim 8, Chakravorty discloses the vias includes signal vias, each signal via being electrically disconnected from both the power and ground planes (figure 3).

Allowable Subject Matter

Claims 4 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 4 and 9, the prior art alone or in combination does not teach the limitation of the substrate having first and second portions, the first portion

having the high k-value dielectric material and the second portion not having the high k-value dielectric material, the signal vias being formed in the second portion.

Citation Relevant of Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Hung et al. (US 6,430,059) disclose integrated circuit package substrate integrating with decoupling capacitor.

b. Sankman et al. (US 6,430,058) disclose integrated circuit package.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T. Ha whose telephone number is 571-272-1974. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Nguyen T. Ha'. The signature is fluid and cursive, with a large initial 'N' and a long horizontal stroke at the end.

Nguyen T. Ha
April 26, 2005